

Perils of plastic



Latifah says everyone can do their part to reduce the amount of plastic used.

While plastic is bad for the environment, we can't do without it. An environmental studies professor tells **Zuhaila Sedek-De Booij** ways to minimise its impact

IF you can list 10 items around you that don't contain plastic in 10 seconds, you are probably bluffing or just oblivious. Truth is, plastic is everywhere. From your daughter's hair clips and your wife's mobile phone to the television in your living room — they are all partly made of plastic.

As much as plastic is anathema to environmentalists, it may be impossible to part from it. Having plastic in our lives is like a love-hate relationship. It's not good for us, but we need it.

But there is way to find a balance between its practicality and its impact on Mother Nature. Associate professor Dr Latifah Abdul Manaf from Universiti Putra Malaysia's Faculty of Environmental Studies tells us more.

WHAT IS PLASTIC?

Plastic was invented in 1855 by Alexander Parkes. It wasn't as common back then as it today. It was only in the 1920s, during industrialism, that it started gaining popularity.

Today, it comes in many forms. Latifah says there are two divisions of plastic — thermosets and thermo-

plastics. Thermosets, as what the name suggests, solidifies and sets irreversibly when heated. Because of this criterion, thermosets are known for their durability. In manufacturing, thermosets are used in automobiles and construction application, adhesive, inks and coatings, just to name a few.

Meanwhile, thermoplastics soften when exposed to heat. At room temperature, it goes back to its original form. Because of this nature, thermoplastics can be moulded into specific shapes. Among the different variation of thermoplastics are polyethylene, polypropylene, polystyrene, polyvinyl chloride (PVC) and polytetrafluoroethylene. Thermoplastics are used to make items like jugs, polymer bank notes, hoses, credit cards and carpet fibres.

Plastic is made of petrochemicals. "Petroleum is a natural resource. Over time, there is a risk that we may run out of it," says Latifah.

In 2011, plastic production in the country increased by 26.1 per cent compared to 2010. While we are using more petrochemicals to make plastics, plastic production requires a lot of energy too — starting from the point when the petroleum is drilled, up to the stage where

feedstock reaches manufacturers to be turned into end products.

NUMBER ONE ISSUE

The main environmental issue is that plastic is non-biodegradable. "Plastic is strong and degrades slowly, the chemical bonds that make plastic so durable make it equally resistant to natural processes of degradation. Since the 1950s, one billion tonnes of plastic have been discarded and may persist for hundreds or even thousands of years," says the expert in solid waste management and development expert system.

"If you bury something in a plastic bag, you will see the same bag when you unearth it after five years."

According to a 2010 study by Iwan Budhiarta, Chamhuri Siwar and Hassan Basri titled *Current Status of Municipal Solid Waste Generation in Malaysia*, 21 per cent of waste composition in Kuala Lumpur is made up of plastic.

The researchers stated that the amount of solid waste created in Kuala Lumpur and delivered to Taman Beringin Transfer Station landfill in Jinjang was recorded at 2,000 tonnes per day. On average, a person throws away 1.2kg of solid waste a day.

Bioplastic

Choose a plastic packaging that says Bioplastic, which is made of biomass (renewable sources like corn starch and vegetable fat)

"As the population grows, the amount of rubbish at the landfills will increase too. At landfills, garbage

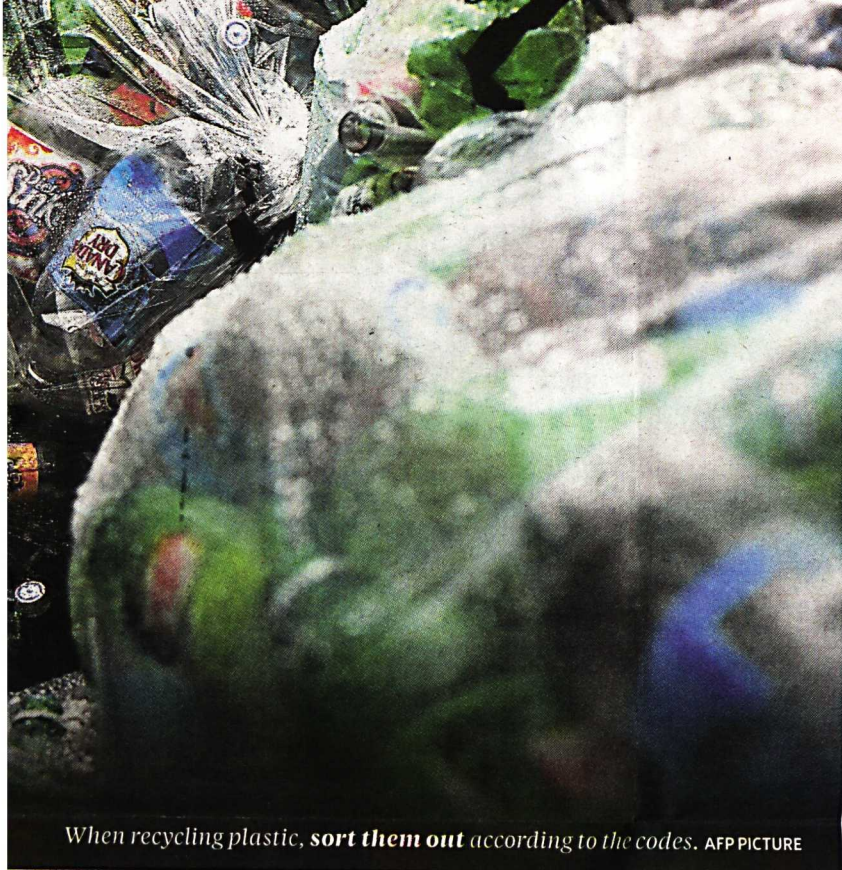
is sorted accordingly, some are for recycling while others are compressed together and covered with soil," says Latifah.

When plastic is "left" untouched at the landfills, the material will eventually contribute to the development of greenhouse gases, which is harmful to the ozone layers.

TOXIC FUMES AND HEALTH PROBLEMS

Plastic can give rise to toxic fumes too. This poisonous gas is released when plastic is burnt. At some solid waste incinerators, controlled high-temperature incineration above 850°C for two seconds is done with selective additional heating to break down toxic dioxins and furans (colourless volatile liquid) from burning plastic. Normally, incinerators





When recycling plastic, **sort them out** according to the codes. AFP PICTURE

also include flue gas (gas that exits to the atmosphere via a flue) treatments to reduce pollutants.

"Uncontrolled incineration of plastic produces a cancer-causing chemical."

Plastics can be deadly to health. A chemical called Bisphenol A, or BPA, that comes with plastic is believed to be carcinogenic, can cause heart problems, disrupts the body's hormone level and cause many other health problems.

"This chemical goes into our tissue and attacks slowly without us realising it," says Latifah. But sadly, other than baby feeding bottles, not a lot of items carry the sign "BPA-free". BPA is available in the lining of canned food, medical devices, compact discs, dental sealants and water bottles.

CATALYST TO ANIMALS' SUFFERING

Discarding plastic can cause pollution and attendant environmental problems. In 2004, an English scien-

tist reported that even microscopic plastic fragments that have worked their way down and are polluting deep ocean sediments are now in the plankton (which sits at the very bottom of the food chain). This is extremely unhealthy for marine life.

Polluting waterways with plastic can cause fatalities to innocent animals. Take the Great Pacific Garbage Patch as an example. Here, a collection of marine debris (trash that ends up in waterways) can be found because this area sits in a high-pressure area between Hawaii and California. The currents bring all marine debris to this location.

There is an island here that is home to various species of birds. There are no humans. Among the accumulated garbage, the most prominent is plastic. This comes as no surprise as plastic does not degrade easily. A lot of birds have become victims of this garbage patch due to the excessive



PVC is probably the most lethal type of plastic, which is why it is called The Poison Plastic.

amount of plastic they accidentally consumed.

Another similar case involves sea turtles. WWF-Malaysia reported that there are incidents where sea turtles die due to them mistaking plastic bags for jelly fish — their source of food. In Malaysia, sea turtles are an endangered species.

DON'T DISCARD, RECYCLE

Plastic is so significant in our daily life that, full avoidance may be improbable. But we can recycle or reuse it.

"Create a new function for used plastic. The aim is to keep plastic away from nature because of its non-biodegradable nature," says Latifah.

According to Penn State University, a plastic bag takes 10 to 20 years to decompose, whereas a plastic container takes 50 to 80 years. A plastic soda bottle takes about 450 years to putrefy!

However, there have been claims that there is a toxin-leaching problem when plastic bottles are reused.

Make it a habit to recycle at home, even if the effects are considered minor. "Although the change that you are going to make is small, when combined with small contributions from other people, the impact can be big," says Latifah.



It's difficult to completely avoid plastic because it is used for many items including shoes.

But plastic has to be sorted accordingly when recycling. Recycling centres do plastic waste separation according to codes (numbered 1 to 7). Polyethylene terephthalate plastic items are marked with resin code 1 and bears the letters PET or PETE. Plastic soft drink, water and juice bottles are the most common items made from PET. Recycling programmes commonly accept this type of plastic, as it can be recycled into new packaging or used in textiles and carpeting.

PVC, indicated by resin code 3, is used in vegetable oil bottles, plumbing pipes, wire coating and detergent bottles. Recycling

centres usually do not accept PVC for recycling.

PVC is sometimes called The Poison Plastic. This is because the life cycle of PVC is toxic from start to end. The manufacturing of PVC causes some of the most lethal chemicals like mercury, lead, dioxins and phthalates (used to soften plastic and make it flexible) — all known to be harmful to health.

Other than recycling, reduce plastic by substituting it with other materials such as paper, ceramic, glass or stainless steel. Support No Plastic Day.

"Try to opt for cardboard containers instead of plastic," Latifah advises. "Do whatever is necessary to cut down on the use of plastic."

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Reuse plastic bottles to preserve the environment.



Landfills produce **greenhouse gas.**



Plastic takes a long time to decompose.